

Remarks

Claims 1-19, 22-29, and 31 are pending in this application.

Claims 1-4, 6-19, 22-28, and 31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen (U.S. Pub. No. 2003/0195017) in view of Proctor (U.S. Pub. No. 2001/0031648). Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kumaki (U.S. Patent No. 6,473,411) in view of Allen (U.S. Patent No. 7,185,097). Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Proctor, and further in view of Komara (U.S. Patent No. 6,690,662).

Independent claim 1 recites a wireless communication system comprising a plurality of access points and a plurality of subscriber units. Each access point has at least one omnidirectional antenna forming a substantially uniform coverage area around the access point. Each subscriber unit has at least one directional antenna forming a directional coverage area. The directional coverage area is selectable from a plurality of directional coverage areas provided by the subscriber unit. Each subscriber unit communicates with a particular access point through transmissions between the subscriber unit directional antenna and the omnidirectional antenna for the particular access point.

Chen describes a wireless communication system with base station beam sweeping. In more detail, the base station creates a signal beam using a mechanically-steered directional antenna. The signal beam sweeps over the coverage area of the base station.

In general, Chen describes the traditional sectorized wireless communication system, with the special feature of the base station using beam sweeping.

In contrast, the invention contemplates a reverse sectorization wireless system.

In making the rejection, with regard to the claimed omnidirectional antenna forming a substantially uniform coverage area around the access point, the Examiner directs

attention to elements 120 and 324 in Chen. Applicants respectfully point out that element 120 is a broad beam antenna. However, as described at paragraph 51, broad beam antenna 120 is used to send broadcast information to all the subscriber stations. Although broad beam antenna 120 is used to send broadcast information, note that claim 1 recites a subscriber unit communicating with a particular access point through transmissions between the subscriber unit directional antenna and the omnidirectional antenna for the particular access point. The broad beam antenna 120 in Chen is not receiving communications from subscriber units, but rather is specifically being used to send broadcast information within the traditional sectorized wireless communication system of Chen. It is the sweeping beam in Chen that receives the subscriber unit transmissions.

With regard to element 324, at paragraph 76, Chen describes broad beam coverage using antenna 324. Note that antenna 324 does provide non-sweeping broad beam coverage, and may be an omnidirectional antenna or a 120° directional antenna for a sectorized cell. Nevertheless, this is a further description of broadcast coverage, while the scanning beam of the base station is still being used to receive subscriber unit transmissions. Thus, this is not describing reverse sectorization in a wireless communication system as claimed.

Put another way, there is no teaching in Chen of the claimed access point having an omnidirectional antenna forming a substantial uniform coverage area, wherein a subscriber unit communicates with a particular access point through transmissions between the subscriber unit directional antenna and the omnidirectional antenna for the particular access point. To the extent that antenna 120 or antenna 324 is considered by the Examiner as an omnidirectional antenna, Chen only describes these antennas as being used to transmit broadcast information and these antennas are not used in a reverse sectorization way as claimed.

The Examiner acknowledges that Chen fails to describe subscriber units having at least one directional antenna forming a directional coverage area. As pointed out above, Chen has further shortcomings in that Chen does not describe a reverse sectorization system. With regard to Proctor, the Examiner relies on Proctor for teaching a subscriber unit having a directional antenna forming a directional coverage area. To the extent that Proctor does describe

a directional coverage area for a subscriber unit, Proctor still does not describe a reverse sectorization system as claimed and does not overcome the shortcomings of Chen.

Proctor does describe a directional antenna on a subscriber unit. Nevertheless, both Proctor and Chen describe traditional sectorization wireless communication systems. In Chen, the traditional communication system is specialized by utilizing a base station with beam sweeping. In Proctor, the traditional communication system is specialized by using directional coverage from the subscriber units. However, both references still describe traditional sectorized wireless systems and there is no suggestion of an access point with omnidirectional coverage receiving transmissions from directional coverage subscriber units, even when considering the teachings of Proctor, because there is no omnidirectional pattern for receiving at an access point.

For the reasons given above, independent claim 1 is believed to be patentable.

Independent claim 14 recites a method of wireless communication. The method comprises transmitting downlink information in a substantially uniform coverage area around each of a plurality of access points, and receiving the downlink information at a subscriber unit. The method further comprises transmitting uplink information in a focused coverage area from the subscriber unit, and receiving the uplink information at one of the access points. Information is routed between the plurality of access points by receiving the information in a distribution point and sending the information to an access point in communication with the distribution point if the information is destined for a subscriber unit in communication with the access point. Otherwise, the information is forwarded to another distribution point. Chen fails to describe transmitting uplink information in a focused coverage area from the subscriber unit, and receiving the uplink information at an access point where downlink information is transmitted in a substantially uniform coverage area around the access point. In Chen, the downlink is achieved with the base station beam sweeping. In Proctor, the downlink is presumably achieved in a traditional manner, although a directional subscriber unit is described

Independent claim 31 recites a method of communicating comprising establishing a plurality of access points. Each access point has an omnidirectional antenna. The method further comprises establishing a channel between one of the access points and one of a plurality

of subscriber units by selecting one of a plurality of antenna directions in the subscriber unit. The selected antenna direction implements a directional antenna. The method further comprises transmitting information packets in a uniform coverage area around each access point, and receiving information packets at each access point. Each received information packet is transmitted from the directional antenna. There is no motivation to combine the cited references to achieve the invention as defined by claim 31. For example, claim 31 recites a channel between the access point and a subscriber unit with the access point having an omnidirectional antenna and the subscriber unit having a directional antenna. In Chen, the access point for the communication channel utilizes a base station with beam sweeping, while Proctor is not relied upon for these features, and the downlink is presumably achieved in a traditional manner.

The remaining independent claim is claim 29.

Independent claim 29 recites a wireless communication system comprising a plurality of access points, a network of distribution points, and a plurality of subscriber units. Note that each access point transmits and receives information packets over a substantially uniform coverage area around the access point. The Examiner relies on Kumaki for this subject matter. Kumaki does describe hand-off control for mobile terminals. However, there appears to be no teaching in Kumaki or Allen of a reverse sectorization communication system as claimed with uniform coverage from the access point and directional coverage from the subscriber unit. The Examiner only states that the information packets transmitted are inherently transmitted substantially uniform by mobile terminals 201 and 227.

The remaining claims are dependent claims and all claims are believed to be in condition for allowance.

Respectfully submitted,
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